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# Discussion: Extending Relational Algebra (w2)

To maintain order, we need to modify existing relational algebra operators. The operators that need to be modified are as follows:

- Selection: Retrieves specific tuples while preserving their original order.
- Projection: Retrieves specific columns from tuples, maintaining the order of the tuples.
- Union: Returns all specified tuples from either table, preserving the order from both input relations.
- Difference: Returns tuples from the first table that are not in the second table, maintaining the order of the first table.
- Intersection: Returns tuples present in both tables, preserving their order.
- Cartesian Product: Returns all possible combinations of tuples from both tables, ensuring the order of tuples is respected.
- Join: Combines related tuples from both tables, preserving the order of tuples from the input relations.

To support ordered data effectively, we should introduce a new operator, OrderBy, which explicitly sorts tuples based on a specified column which acts as a unique ID.

Excellent post, Tomislav,

Original relational algebra using sets for their data is a neat way to be fast and concise, but it is difficult when needing to preserve order, especially if we need to perform a number of operations in sequence. We wouldn't want the data to get mixed around and the output of our operation to be inconclusive. Sorting the data and then operating is a good alternative. You mentioned modifying the operators and adding a new one named Order, which would indeed help in preserving order by introducing an anchor point where the data should remain seated.